

SSEN Transmission's response to BEIS and Ofgem's proposals for a Future System Operator role

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Executive Summary

The energy industry is undergoing significant and fast-paced change as society's demands and priorities become more keenly focused on climate change. Achieving Net Zero by 2050, and 2045 in Scotland, while maintaining security of supply and stimulating the economy as we recover from Covid-19, is a momentous challenge. It is also one that requires the right institutional framework where roles and responsibilities of all industry stakeholders are clear and well-understood. We agree with Ofgem and BEIS that the institutional framework must be grounded in the new challenges we see in the future.

However, institutional reform can be highly disruptive and we must not be distracted from the aforementioned challenges. We consider that any change must focus on key aspects of governance and ensure it:

- provides transparent and timely decision-making and frameworks to maintain Net Zero pathways;
- provides clear direction on the roles and responsibilities of each participant and avoid overlap (i.e. decision-making bodies) to keep pace with a just transition including decarbonisation goals, protecting and enhancing the natural environment and supporting local communities ; and,
- retains the high performance behaviour, benefits, and outcomes evident under the current framework.

It is essential in any assessment of whether change is required must consider the benefits of the current model and acknowledge the transition to Net Zero that is already well underway. Significant parts of the current institutional framework, and organisations therein, are already delivering well for our future challenges. TOs are already playing a crucial role in the achievement of GB's Net Zero targets, particularly in the North of Scotland which is a gateway to renewable energy. Between 2013 and 2020, the UK electricity sector's emissions have fallen by over 100 MtCO₂e. In the north of Scotland, we have invested over £3 billion in network infrastructure that has allowed renewable generation to more than double. The clean green electricity produced in the north of Scotland is playing an outsized role in the effort to decarbonise our nation¹.

Clarity of Roles and Responsibilities

We have significant concerns on the proposed enhanced roles for the new FSO to undertake. We seek clarity on roles and responsibilities to ensure the FSO's roles do not overlap with those of TOs (and Ofgem, BEIS, renewable developers etc). Specifically, we ask BEIS to define what is meant, in practice, by an "enhanced electricity system planning and network development" role for the FSO. This must set out clearly what these roles are vis-à-vis the role of the TOs.

¹ https://www.ssen-transmission.co.uk/media/5701/final-elas-sustainability-report-2020_21.pdf

It is the TOs who have the experience in network planning and development, it is the TOs that own the wider stakeholder relationships and it is the TO that is accountable to consumers, customers, and wider stakeholders. Network planning cannot be undertaken in isolation from design, development, and delivery considerations. Collaborative national long-term system planning (ie NOA) considers national impacts, but importantly relies on detailed options presented by TOs based on ‘on the ground’ design, development (including environmental and community impacts), stakeholder engagement, and costing.

Whilst collaboration between the ESO and TO is required, it is the TOs who are undoubtedly best equipped and have the track record, experience, expertise and established processes to determine the future needs of their local networks. It is the TOs that own the wider stakeholder relationships and undertake end to end consideration of network planning, design, development, and delivery.

If the intent is to expand the TOs system planning role to a new FSO (noting this is not clear from the consultation) this will at best lead to duplications or parallel functions between the FSO and TOs, which will be expensive and inefficient for consumers at a time where there is already a significant skills shortage. At worst, it will lead to responsibility being given to an organisation that is not best placed to be accountable for delivery. TOs are accountable to consumers, customers and wider stakeholders, not the ESO. The TOs should therefore retain all responsibility for network planning and development.

We are currently working together across TOs and the ESO on the Offshore Transmission Network Review (OTNR) Holistic Network Development (HND)’s Central Design Group (CDG), which should be delivered in full by the ESO by January 2022. Any delay to this workstream will be detrimental to the 2030 targets. The workstream recognises that the ESO does not have experience in many of the practical aspects of detailed network planning and development, which sits firmly with the TOs.

Any regulatory framework must retain one sole decision maker for investments and one sole organisation for dispute resolution. Ofgem must retain these roles. Regarding decision making, as the regulator, Ofgem has clear accountabilities to consumers and legislative processes for challenge. Duplication, or introduction of two parties to undertake this role, is inefficient and can lead to lack of ownership. Furthermore, any form of dispute resolution between industry participants should lie with Ofgem, not an industry participant. Separation of powers is essential to ensure there are no conflicts of interests (what the FSO proposals is intended to avoid). As an industry participant regulated under Ofgem, it is essential the FSO is treated equally to other industry participants. For example, if the FSO in the future is responsible for competitive processes for onshore infrastructure, it too must be accountable for its actions, if for example, this process results in late delivery or consumer detriment.

A clear legislative approach to establishing the FSO

There are weaknesses associated with “learning by doing “and the importance of a clear purpose and upfront policy objectives cannot be underestimated. Regarding the ESO’s Pathfinder initiative, specifically the Stability Pathfinder, introducing competition via a

“learning by doing” approach to address network issues has resulted in a delay of nearly 12 months. This is a direct result of the ambiguous design and implementation of these Pathfinder projects by the ESO. We are unable to address the major risks to the network (ie stability) nor answer the concerns raised by customers because the ESO had not considered in advance the unintended yet foreseeable consequences likely to be caused by its own process.

It is essential Ofgem and BEIS clearly define the current problem and/or future challenges within the energy system, how an FSO will address these, why the introduction of an FSO is the optimal way forward, and what benefits it will provide end consumers, without making large sweeping generalisations. It’s not clear how a new body and structure will address functional issues within the current ESO, nor is it clear what apparent problem it seeks to resolve. General sweeping statements that an FSO will result in “improved whole system decision making” is not specific, measurable nor time bound.

We welcome clarity on timelines, and confirmation that statutory consultations will be undertaken with all members of industry to establish codes and licences ahead of any introduction of an FSO.

Impact Assessment

The Impact Assessment (IA) assumes that a new body will solve a wide array of current network issues in broad terms, but has not identified specifically what is hindering whole system solutions and Net Zero.

We disagree that a new FSO will provide the anticipated benefits of improved whole systems decision-making set out in paragraph 48. Removing perceived conflicts of interest will not introduce a step change in improving network planning and system operability. The current ESO relies on TO knowledge in identifying, assessing, and costing network solutions. Many of the improved whole system insight aspirations can be undertaken in the current framework, with the right codes, incentives, and licence obligations.

The IA grossly overstates benefits of the FSO’s role and benefits in a competitive framework without evidencing claims. There is no evidence nor robust data that supports the claims in the IA that perception of an impartial FSO may increase participation in competition; enhanced powers will enable identification and realisation of opportunities for competition; and better decisions will be made on the competitive framework due to removal of perceived conflicts of interest.

There is no articulation of how an FSO could enable such significant cost savings. The claim that an independent FSO could provide 25-50% cost savings is wholly unsubstantiated and in fact, misleading for consumers and participants in the industry. We ask BEIS and Ofgem to provide comparable case studies where policy intervention has introduced proven and measurable cost savings of this nature.

We also seek more transparency and clarity on how Ofgem and BEIS have considered the RIIO-2 framework, and how it derived the cost saving figures in its IA. We think the IA could

have also considered an option where the ESO is strengthened within the current framework to minimise institutional disruption, but also achieve policy goals. For example, whether additional mechanisms could be introduced, similar to the whole system licence conditions and Coordinated Adjustment Mechanism (CAM) re-opener.

SSEN Transmission's response to BEIS and Ofgem's Energy Future System consultation questions

We highlight our responses to questions 5, 6, 7, 12, 22, and 23.

We do not have strong views on questions 3, 4, 8, 9, 10, 13, 14, 16, 17, nor 26.

1. Do you agree that net zero will create the need for new technical roles in the electricity and gas systems, and require a new approach to energy system governance?

We agree new, and some amendment of current technical roles are required to better facilitate more efficient and agile response when identifying whole system solutions to allow better coordination of infrastructure and flexible solutions.

All industry participants must prioritise the transition to Net Zero and each participant must explicitly articulate its responsibilities and remit in relation to Net Zero, how it intends to contribute and enable Net Zero, and crucially how this will be measured and best incentivised. Within the current ESO's remit, the technical approach to CBAs must be revisited to ensure a renewable future, and not be solely based on constraint costs. The BID3 economic dispatch optimisation model has worked well in the past. However, factors beyond constraint and capital costs are not accounted for. Network planning must consider necessary infrastructure and solutions to meet Net Zero targets. The recent FES for 2050 should be undertaken more regularly and more in depth.

We note that depending on the roles and responsibilities of the new FSO, from a commercial aspect, new contractual frameworks with parties across the industry will need further consideration, including any proposed reallocation of risk associated with any change in roles and responsibilities. This will require consultation and agreement across industry. Such arrangements in the past have taken a considerable period to negotiate and finalise, meaning that this could result in a significant impact on renewable generation customers with existing contracts and TOs under the current proposals - presenting an additional risk to investment in GB renewable projects.

We also emphasise the need for new technical roles within Ofgem to enable Net Zero. This includes:

- having an increased awareness of the level of generation required to meet Net Zero pathways to better assess TOs local scenarios and understand that basing investment decisions on generation certainty alone isn't a pragmatic approach;
- establishing a regime that facilitates subjective judgement alongside quantitative analysis to make pragmatic decisions on risk. The regulatory regime must offer more flexibility to account for uncertain investments. Pragmatic decision-making and acceptance of some level of risk is increasingly required by the regulator, which must reflect the new aims of achieving net zero, and not only what regulators have learned from past and potentially out-dated experience on cost savings alone; and,

- having strong commercial understanding within working level teams of infrastructure development and delivery, including challenges and nonlinearity of asset development, operation, and maintenance.

2. Do you agree that the establishment of a Future System Operator is needed to fulfil the kinds of technical roles needed to drive net zero?

Improvements can be made on the roles that the ESO currently fulfils in order to focus effort and attention on the key enablers for Net Zero. The ESO generally has the skills and knowledge to address the technical issues of operating a Net Zero GB system. However stronger licence obligations and incentives should be put in place to ensure the ESO highlights and actively resolves these issues. To undertake its current and any additional responsibilities for Net Zero, the existing ESO require significantly more resource and knowledge.

The current system of governance can only achieve its policy outcomes of Net Zero if the industry as a whole moves away from being solely cost focussed and begins to consider how it will make the trade-offs necessary to balance other consumer and stakeholder priorities (such as Net Zero), as well as affordability for consumers today and in the future. Government must enable and facilitate Ofgem to take a more pragmatic view on risks, allowing quicker and more agile decisions on strategic infrastructure investments with confidence and aligned to national strategic direction.

The introduction of an FSO could create unwelcomed disruption to the energy industry in line with the already challenging timeframes associated with Net Zero delivery. This time, effort and resource could instead be put in place to improve the current ESO.

Ofgem and BEIS identify the below three points as key risks of the current ESO functions:

- i. perceived partiality by stakeholders and concerns over transparency and credibility which could limit the SOs' role in coordinating change and providing industry leadership;
- ii. inefficiencies in functions related to network planning and facilitating competition; and,
- iii. commercial interests, particularly in gas, that may dampen the SOs' incentives to cooperate with and facilitate whole system coordination and collaboration.

We do not think these risks are the biggest industry barriers to Net Zero.

3. Do you agree that a Future System Operator should have roles in both the electricity and gas systems?

We do not have strong views.

4. Do you agree that a Future System Operator should be entirely separate from National Grid plc?

The separation of the ESO from National Grid is necessary if Ofgem and BEIS seek to give the FSO additional responsibilities with regards to the introduction of competition for network

solutions. The rules of competition cannot be designed until separation occurs as the perception of a conflict of interest is likely to continue, particularly given National Grid Plc has an active Interconnector and Ventures division.

5. What issues are there with existing institutional arrangements in the UK energy system in relation to system-wide decision-making and planning?

Prioritise Net Zero in decision-making

As we set out in Question 2, the industry must, as a whole, move away from being solely focussed on cost efficiency and begin to consider how it will balance other key priorities, such as a just transition to Net Zero. It must be recognised, particularly within the “low cost culture” embedded in Ofgem, that **achieving environmental and Net Zero objectives have associated implementation costs but deliver long-term benefit**. It should also be recognised some costs to consumers will rise as a result. For example, as the world races toward Net Zero, the limited supply chain has its choice of work, therefore negotiating costs of building network infrastructure may become less competitive.

There is a balance to be struck on affordability for consumers today, versus those in the future. We support Maxine Frerk’s points in her papers “Investing for net zero in the face of uncertainty: Real options and robust decision-making”² and “A Framework for Assessing Intergenerational Effects of Decarbonisation and Climate Adaptation”³ that Net Zero may require unavoidable additional costs, but it is a price worth paying. Frerk states, “The intergenerational implications of climate change require new thinking about how to undertake the appraisal (cost-benefit analysis) of spending, regulations or other government actions designed to address climate change – whether by reducing greenhouse gas emissions or putting in place measures to adapt to current and anticipated changes.”

Adaptive decision-making is required targets

“Ofgem has to be allowed to take some risks. There is a risk of overinvesting, but there is a real risk of underinvesting too.”⁴ – Professor Cloda Jenkins, Professor of Economics, University College London

Investment decisions need to be based on our aspirations and end goal (ie legislated Net Zero targets) rather than based on what is needed now (e.g. the amount of contracted generation). Both of which require adaptive regulation and planning. We agree with Sustainability First’s view that “Adaptive regulation and adaptive planning can help policy and

² <https://www.oxfordmartin.ox.ac.uk/publications/investing-for-net-zero-in-the-face-of-uncertainty-real-options-and-robust-decision-making/>

³ <https://www.sustainabilityfirst.org.uk/publications-project-research-reports/286-a-framework-for-assessing-intergenerational-fairness>

⁴ <https://committees.parliament.uk/oralevidence/2493/pdf/>

regulation keep more in step with changing expectations and science; to flex with events and deal with long-term uncertainty”⁵.

The regulatory regime must offer more flexibility and forward-looking vision to account for “uncertain” investments to achieve Net Zero. Net Zero requires the connection of high levels of generation in a timely and efficient manner. Anticipatory investment should be considered to enable Net Zero, allowing networks to plan for investments with certainty, at least ten years ahead. This holistic approach will also minimise the impact on local communities and protect and enhance the natural environment (including biodiversity), an approach which is currently being explored through the OTNR. Least cost, incremental, risk averse investments based on least worst regret analysis is an outdated short-termism approach and must be avoided. These considerations must be undertaken by Ofgem as well as the future FSO.

Ofgem must make decisions and provide certainty now, to facilitate large renewable generation opportunities that achieve a Net Zero future. In addition, government must set out the framework enabling Ofgem to take calculated risks and make pragmatic decisions on strategic infrastructure investments with confidence, aligned to national strategic direction.

Frerk⁶ and Zachary et al.⁷'s papers, as well as Professor Cloda Jenkins' oral evidence⁸ to the Committee for Industry and Regulation suggest that analysis tools are required to support decision making, however pragmatic decision-making and acceptance of some level of risk **is increasingly required by the regulator**. These decisions must reflect not only consideration of Net Zero but also how it will be achieved.

New and current policies must enable Net Zero

Net Zero should be at heart of any policy development. Current policy developments are contradicting one another and delaying Net Zero. Ofgem and BEIS must also carefully consider the practical implications as well as social and environmental impacts of their policy aspirations, rather than solely focussing on desk-top assessment reflecting economic theory rather than reality.

For example, competition (i.e. Pathfinders) is incentivising cheapest up front solutions, considering construction and supply chain savings over an arbitrary contract term, rather than the solution that is most efficient over the period of the system need (which will be variable) including the operational and maintenance costs over the period of need. This approach takes no account of an ever-changing system or that solutions can be deployed across TO networks to resolve multiple issues, not just one in isolation. TOs are able to take a holistic approach across their portfolio to consider whole system approaches, compared to Pathfinders, that has to date limited the scope of projects to enable competition.

⁵ [Adaptive regulation and adaptive planning: Issues for economic regulation in water and energy \(slide deck\)](https://www.sustainabilityfirst.org.uk/publications-project-research-reports/242-regulation-for-the-future) ([sustainabilityfirst.org.uk](https://www.sustainabilityfirst.org.uk))

⁶ <https://www.sustainabilityfirst.org.uk/publications-project-research-reports/242-regulation-for-the-future>

⁷ <https://www.ofgem.gov.uk/publications/decision-making-future-energy-systems>

⁸ Transcript: <https://committees.parliament.uk/oralevidence/2493/pdf/>

Competition should not come at any cost. It must instead show verifiable benefit for consumers without creating further costly barriers to Net Zero.

Similarly, with regard to Transmission Network Use of System (TNUoS), the charging methodology was originally designed to enable generation closer to demand. This outdated approach fundamentally ignores the reality now, that the areas of greatest wind potential are not situated conveniently next to large demand centres. The current wider TNUoS methodology results in more expensive charges for renewable, intermittent generation in the north of Scotland where natural renewable resources are abundant. For example, an onshore wind farm in the north of Scotland currently pays £5.54/MWh as part of the locational TNUoS charges compared to a similar site in Wales that will be paid £2.81/MWh.

This not only creates a barrier to deployment for generation in the north of Scotland but also has knock-on impacts for consumers. Higher TNUoS charges currently make Scottish projects less competitive within the Contracts for Difference (CfD) auctions, with successful projects raising prices for consumers to account for additional cost, and lower priced bidders elsewhere in GB benefiting by being brought up to the cleared strike price.

Furthermore, forecasting wider TNUoS is extremely unpredictable and volatile for all GB generators. Investors need cost certainty and clear, forecastable TNUoS when planning and delivering long-term investments at lowest cost of the UK consumer. This unpredictability results in project finances being inflated to cover risk margins and future variability. Analysis from NERA Economics estimated that the cost of that risk by 2030 could be between £122 to £391 million per year. These increased margins will be passed through to either energy market prices or into support mechanisms such as CfD, ultimately meaning higher costs for consumers.

Lastly, the Balancing Mechanism should not be left as the only option to manage a major system constraint as it leads to significant market distortion and inefficient system with the ESO paying significant sums to resolve some issues which could be planned for through better network development. The ESO could play a larger role in indicating futures system requirements.

We expand on this section in Question 6.

Roles and responsibilities

Roles and responsibilities of industry participants, and its remit to Net Zero must be clear. Specifically, Ofgem will play an integral role in the transition and must explicitly articulate its responsibilities and remit including identifying how its policies and decisions impact Net Zero. It must set out how it intends to enable and crucially, how it will measure its progress as a facilitator of Net Zero, which it has not done to date.

Transparent engagement between the ESO, Central Government and Ofgem is critical in such fundamental policy development. Early engagement with the wider industry and its stakeholders is also required to enable this wider group of participants to reflect the reality of service delivery into policy-making and implementation to prepare and challenge, where

appropriate, any incentives/directions associated with policy change to ensure it achieves the intended outcomes.

6. What examples/case studies are you aware of where net zero delivery in one part of the energy system did not adequately account for cross-system impacts or costs?

TNUoS charging and access reform

TNUoS charges are acting as a blocker to the commercial viability of renewable energy projects, particularly in Scotland. The current Transmission network charging methodology was developed 30 years ago and does not consider the national focus on decarbonisation and the energy system transition. At worst, it acts as a barrier to Net Zero. TNUoS was designed to encourage generators to locate close to the demand and reduce loss, which was appropriate for a fossil fuel-based system but now leads to disproportional charges by location as we move toward a renewables-based energy system.

Ofgem has been considering how electricity networks can be used efficiently and flexibly, reflecting user's needs and allowing consumers to benefit from new technologies and services, under the ongoing Access and Forward-Looking Charging Review. One of the proposed reforms looks to extend wider (locational) TNUoS charges to Distributed Generation (DG) over 1MW. The current TNUoS charging regime already does not send the appropriate signal to enable the capacity required, in fact it does the contrary.

As a facilitator in the connection of renewable energy, we have consistently heard strong calls from our generation customers of the critical importance to create a level cost playing field for Scottish projects. These calls consist of particular concerns of wider TNUoS charging adversely affecting the investment case of new and existing projects due to high, volatile and unpredictable costs.

Exposing DG to the current TNUoS charging regime will see the same concerns being emulated by smaller generators. Currently DG represent around 40% of connected generation on our network and by 2050 we expect that this figure could be around 25%. Given that our North of Scotland Future Energy Scenarios tell us we need 33-37GW of renewable electricity by 2050 from the north of Scotland alone, this shows how important smaller generators will be in delivering the capacity required to meet net zero. Should these proposals be implemented before a wider review of TNUoS has been completed, then they will simply act as another blocker to the timely development of new and repowered renewable generation.

Competition (offshore, onshore, Pathfinder)

Ofgem and BEIS have indicated its appetite to introduce competition (including early and late onshore competition, offshore, and ESO's Pathfinders). We consider this policy direction to be a significant potential barrier to Net Zero.

Introducing a competitive tender process into a framework that already competes most of its projects, and has existing challenging programmes to develop network infrastructure, will

add years of delay to the delivery of critical national infrastructure and consequently Net Zero. This is also in addition to significant constraint costs, effectively cancelling any short term construction/cost of capital benefit.

The ESO's Pathfinder processes to date have suffered from poor engagement, lack of clarity in the design of the process, appropriate impact assessments and the opaque manner in which decisions have been taken. As a result of its 'learning by doing' approach, which appears not to consider fundamental questions that both TOs and connecting customers have raised, the ESO has caused more problems. To resolve these problems, there has been considerable additional often TO-led engagement through the connections processes for both participants of the Pathfinder as well as those out with it. This had led to delay in the process, potentially putting system security at risk and with problems continuing to be unresolved, potentially an overlap in both cost and work for TOs who now must manage any failure of the process.

Furthermore, the piecemeal development of the network and network system operability solutions may result in higher long-term costs for consumers, and loss of sustainability benefits. The individual cost of each solution to a network need may be marginally cheaper, but there could many whole system inefficiencies, resulting in triggering works elsewhere on the network.

Flexibility, ancillary service markets and balancing

The network requires clarity on the role of service markets, as it is not a long-term solution. Current balancing services do not align with Net Zero and act as a barrier when trying to demonstrate need for large investment projects. A balance must be struck between service provision and infrastructure building.

The UK faces unprecedented costs related to generation curtailment. Between January and December 2019, NGESO managed constraint costs ranging from £23million to £94million per month. For the entire year, this totalled over £625million. Further analysis demonstrated that in 2016, the ESO will be paying £1billion on resolving the Scottish export constraints alone. This figure does not include the associated carbon of turning up gas plants south of Scotland, estimated at 3 million tonnes per annum up to the forecasted completion of network reinforcements in 2029⁹.

"Wasted zero-carbon generation is not acceptable under Net Zero and reflects a system that is not optimised." – Laura Sandys CBE and Thomas Powhall's report "ReCosting Energy"¹⁰.

The most efficient solution depends on a variety of considerations. This includes location, generation or distribution constrained areas, etc. The use of flexibility can distort the justification of preferred solutions, ultimately resulting in less optimal solutions for

⁹ <http://www.challenging-ideas.com/wp-content/uploads/2021/02/FINAL-DOC-HR-1.pdf>

¹⁰ <http://www.challenging-ideas.com/wp-content/uploads/2021/02/FINAL-DOC-HR-1.pdf>

consumers in the long run. Flexibility plays part of the role in decarbonisation, however infrastructure remains essential to transport renewable energy to areas of high demand.

The service markets must be properly assessed against their hidden carbon cost and allow a fair comparison with infrastructure for specific license areas. This requires a whole system CBA tool that captures considerations outside of constraint costs.

Large Onshore Transmission Investment (LOTI) Projects and ESO's BID3 model

The assessment of network solutions remains heavily focussed on cost efficiency, which while vital, must also be balanced with and set in the context of wider government, societal and environmental objectives.

The ESO's BID3 model cannot adequately consider and compare the long-term economic benefit of managing constraints costs through the Balancing Mechanism and the option of building infrastructure. The current cost benefit analysis model is centred around capital and constraint costs with little consideration given to Net Zero benefits, nor any other socio-economic benefits, despite Green Book guidance recommendation¹¹. Social and environmental costs, as well inter-generational impacts of not investing now on future consumers, are essential to consider to pursue a just transition to Net Zero.

Whilst the current model served the network well in a world where we did not have challenging Net Zero targets, it is outdated and does not adequately balance the trade-offs between cost savings, and what's required to get GB to Net Zero. A more efficient and agile response is required when identifying whole system and/or flexible solutions to allow better coordination of infrastructure and these flexible solutions without having to go through the very drawn out CBA process which currently exists, and doesn't include Net Zero priorities.

It is not in the spirit of Net Zero to narrowly focus on a preference of paying constraint costs, as these are cheaper in the short term compared to strategic, long term infrastructure development, which is ultimately needed to transport renewable generation to areas of demand.

7. Where should government focus in our efforts to improve systems thinking and coordination across the energy system?

We refer back to Question 5 and 6 where we set out policy areas in the energy system that inhibits Net Zero. Coordination and improved systems thinking can be ameliorated within the current framework. We re-iterate that focus should be on:

- Decisive decision making, using analysis tools to facilitate judgements, and consider Net Zero implications;
- Identifying clear roles for flexibility and infrastructure building, and contribution to Net Zero;

¹¹

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/938046/The_Green_Book_2020.pdf

- Charging reform; and
- Removing barriers to Net Zero (i.e competition) and look to simplify current processes rather than add additional, conflicting and time-intensive new ones.

The system must focus on delivering Net Zero, whilst balancing other equally important priorities such as affordability for current and future consumers.

8. Do you agree that the FSO should undertake all the existing roles and functions of NGESO? If not, please explain why.

We do not have strong views.

9. Do you agree there is a case for the FSO to undertake the long-term strategic functions outlined in Option 1? Please elaborate and provide any views on the functions we have outlined in Option 1.

We do not have strong views.

10. Do you agree that there is not currently a case for the FSO to undertake all GSO roles and functions, including real-time gas system operation, as outlined in Option 2? If you do not agree, please explain why.

We do not have strong views.

11. Do you have views on the proposal for an advisory role? What organisations do you consider would benefit from the provision of advice by the FSO? Who should bear the costs of providing that advice?

The current ESO already plays an advisory role to an extent (however relies on TO input), therefore it's unclear what additional value a FSO could add.

Where the ESO has insights, the ESO should provide strategic direction and enable TOs to provide timely solutions, rather than 'learning by doing'. For example, the ESO has been aware that inertia on the system has been a longstanding issue on the network (at least 4-5 years). However, the current system relies on short term commercial solutions to partially address the problem. The ESO is continuing to constrain renewable generation to manage these system inertia issues, which has cost consumer billions of pounds in constraint costs. These insights could have been considered and shared earlier, and thus could have allowed for TOs to be incentivised to manage issues in an efficient and coordinated manner (taking into account wider system requirements, including security of supply, as opposed to addressing a single problem via short-term market-based approaches).

The ESO has a limited role in challenging solutions put forward by TOs. Its advice is currently based on inputs provided by TOs. The ESO is not an asset owner, has no knowledge of the networks, its operational characteristics, geography and topology, and is removed from practical and pragmatic realities of system plans. It does not have experience in developing, operating, and maintaining networks simultaneously, nor costing solutions. The ESO's role in

challenging solutions will need to be confined to areas where the ESO has knowledge and oversight, for example network access.

We also ask for clarity in the challenge process, should TOs disagree with advice of FSO. This is also why disputes must be managed by Ofgem, rather than another regulated industry participant.

To provide advice, the ESO would require significant upskilling. Currently in the industry, there is a significant skills shortage for roles such as system planners, control room engineers, etc. We welcome further evidence from Ofgem and BEIS as to how these gaps will be filled sustainably and effectively. Currently, with the offshore Holistic Network Design (HND) development for OTNR, the ESO has had to outsource this workstream to Imperial College, as it does not have the resource and capability. It has also used consultants for other related activities, work undertaken under normal circumstances by TOs. Academic or consultants one step removed from project developments will arguably have limited practical knowledge and experience delivering infrastructure projects.

As stated in Question 1, Ofgem also requires additional technical knowledge development to ensure it has the skills, capabilities and leadership to make the robust, timely and pragmatic decisions that are required of it – so that it can act with greater agility to make the necessary long-term decisions required to deliver Net Zero.

12. Do you have any views on the other areas where we are considering new and enhanced roles and functions for the FSO (outlined in section 3.2)?

We have significant concerns with some of enhanced roles being introduced for the FSO. Specifically, system planning and network development, future system operability, engineering standards and energy code development, driving competition in energy markets, and dispute resolution. We are however supportive of the role developing towards further coordination with distribution networks and their operation. This is consistent with ambitions around whole system optimisation.

System Planning and Network Development, and critically evaluating investment proposal

We require further detail on what responsibilities are being proposed for system planning and network development. We request definition and scope of what enhanced system planning and network development specifically entails.

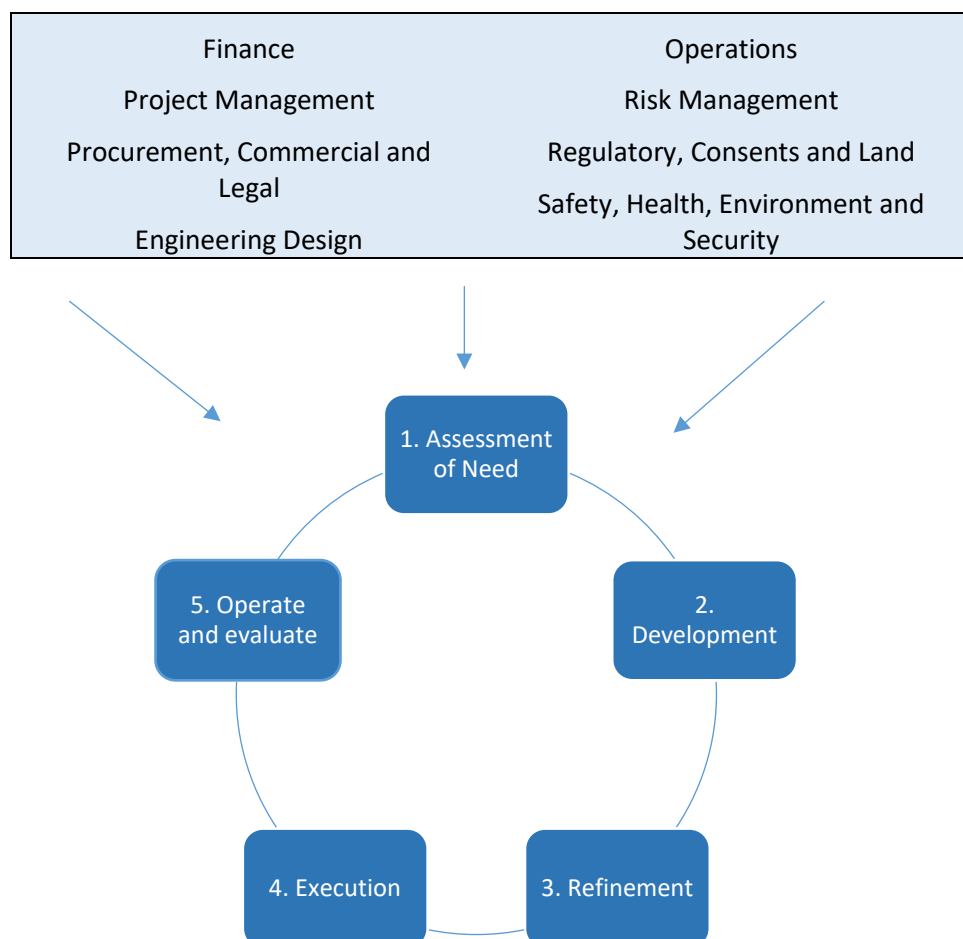
We are concerned with the proposed expansion of the ESO's role to undertake increased network planning responsibilities. It is our experience that system planning cannot be done in isolation from design, development, and delivery considerations. It is for this reason that system planning is not a standalone role in the SSEN Transmission business. The function is deeply embedded across a number of teams to ensure the most efficient solutions are identified. Many teams with various specialisations contribute to system planning and development. These include system planning and investment, project development (including consenting), engineering, commercial, customer and stakeholder engagement, environment,

wayleaves/land teams, asset operation and network control centre (including outage planning).

We request clarity on how and in what timeframe is the FSO expected to identify, recruit and train equivalent functions to undertake it's proposed new roles; how new roles and responsibilities will be managed against a live network which will require these inputs from day one, and how additional 'layering' of skilled resources and associated cost will be monitored and determined to be efficient and of benefit to consumers.

We also ask for clarity relating to the extent that the delivery entity would rely or be required to follow the advice of the FSO. There is a risk of duplication of effort should the delivery entity see the need to confirm its investment justification through its own analysis. We also ask for clarity in the challenge process, should TOs disagree with advice of FSO.

Diagram 1: Network planning project roles and process *All teams within SSEN Transmission feed into the full cycle of addressing network need. No team can be separated or function separately.*



TOs remain best placed to undertake system planning, as they have comprehensive end-to-end experience and knowledge of network solution implementation. System planning is intimately connected to network development teams. Early optioneering and analysis on deliverability is undertaken hand-in-hand with system planning. TOs are able to implement synergies across a portfolio of load and non-load related works, as well as operational expenditure to find efficiencies for optimum solutions and management. We are also able to benefit from economies of scope and scale by identifying and bundling projects to obtain volume discounts and efficiency in delivery programmes with our supply chain. This efficient methodology has evolved over decades during transmission network development. Separating these activities would be sub-optimal and likely lead to inefficiencies and, similarly, the case for lifting them wholesale from one entity and placing it within the responsibility of another has not been justified.

SSEN Transmission system planning teams currently consider whole system solutions with stakeholders. We consider both gas and electricity systems through our North of Scotland Future Energy Scenarios (NoS FES), particularly around the heating element which will require a combination of electrification and hydrogen. Additionally, rail electrification has also been considered for our network area, facilitating Transport Scotland's decarbonisation efforts. Our NoS FES reflect the needs of our local stakeholders and NoS network which then feed into the GB wide FES run by the ESO. All information gathered from our stakeholders and from our NoS FES is then fed into the GB wide FES run by the ESO. The NoS FES provides an additional view of scenarios to the ESO's FES, allowing us to test potential solutions across various scenarios to ensure their appropriateness. The price control also incentivises TOs to identify opportunities across sectors through the Coordinated Adjustment Mechanism (CAM) re-opener and whole system licence obligation.

We urge Ofgem and BEIS to recognise the benefits TOs offer as the party that develops, operates, and maintains the highly reliable GB network. The ESO is not an asset owner, and therefore does not have experience developing, constructing, or managing assets. It is essential that environmental, community, and development considerations are not overlooked as part of the system planning process.

We highlight the potential impact a new planning body could have on the environment and other stakeholders including local communities and connection customers. The impact on these areas present an unknown and unquantifiable risk. These areas of expertise already sit with the TO following decades of building skills, processes and trust with stakeholders, and duplication within a new FSO is not efficient.

Any change in roles and responsibilities will require careful consider, including upskilling and further capacity building which may be timely and costly. A new FSO would require significant increased experience in network analysis, power engineering, analysis, stakeholder (particularly community) engagement and environmental impact among other areas. The FSO would have profound absence of local knowledge to undertake this role. The current ESO does not have a day-to-day active and sustained presence in our licenced area.

TOs are able to provide additional value to network development and management, as it collects practical, local knowledge, such as location factors and safe transportation of assets. This “non-system related” information comes from years of managing the network, understanding the geography and topology of the asset locations, and brings significant value when designing, developing, and constructing the network, that cannot be captured in the Electricity Ten Year Statement (ETYS). This knowledge helps to ensure TOs deliver well-considered and value-engineered solutions for consumers that are effective and economical.

Contextual information is essential for delivery, particularly in the north of Scotland. Inherent knowledge of the challenging locations and topography, sensitive environments, local environmental/consenting constraints, community impacts and logistics of transporting assets through these areas need to be considered when planning and delivering solutions. These considerations must be undertaken when considering any expansion of the network planning role.

We are currently facing challenges with the OTNR HND. It should be delivered in full by January 2022 and any delay will be detrimental to the 2030 targets. However, currently there is a real risk this workstream will be delayed due to the challenges faced by the ESO, which does not have experience in many of the practical aspects of network planning and development. The ESO has taken on a leadership role of the CDG without the resource and skills relying heavily on the direction of academic consultants undertaking desk-top assessment for system planning, stakeholder engagement and routing assessments. This has already caused significant unnecessary delays to the programme which will impact development and delivery.

In the Pathfinder process, there is a gap in knowledge in network management that has resulted in severe implementation issues when the practical reality of the network is not considered during policy development. The Pathfinder process has not been specific, nor time bound in its scope and evaluation processes, competition applicants have flooded the pre application Connection Customer Engagement process. Inconsistent messaging from the ESO meant that some customers applied for connection offers, whilst others did not, and some have required transmission licences to develop their solutions, when it was intended that these would be ‘non-network solutions’ – a term that’s definition has changed as the process has gone on.

There have been consequential effects that have required TOs to operate inconsistently with network codes, and have impacted our RIIO-T2 incentives (i.e. Quality of Connections survey). Anecdotally, we have heard from statutory consultees who have been overwhelmed with ill-informed applications, causing delays to projects for all. Currently, incumbent TOs have agreed standards of engagement across our portfolio of works with local authorities and other consenting bodies. This includes pre-agreed principles for our portfolio, methodologies for assessments, consenting applications, etc. to ensure consistent, high quality work is undertaken, but also to streamline activities as necessary to help manage resource and time of statutory consultees (all of which is ultimately paid for by GB consumers and tax payers).

All of these impacts have to be considered up front and mitigated as far as possible before any implementation.

Lastly, we ask for clarity on the FSO's role to critically evaluate investment proposals. This analysis and decision-making should lie with Ofgem, who have clear duties to current consumers and those in the future. There should be no duplication of evaluation and decision-making roles, as it causes confusion and unnecessary complexity for the decision-making framework, and route to challenge. Separation of powers is essential to ensure there are no conflicts of interests. Ofgem must firmly retain the role of dispute resolution. As a participant regulated under Ofgem, it is essential the FSO is treated equally to other participants, and does not "self-regulate" and undertake responsibilities of the regulator.

Future system operability, engineering standards and energy code development

Consistent with the views we have expressed throughout this response, we have significant concerns over the FSO taking on the role of an Integrated Rule Making Body (IRMB). Determining code direction while, simultaneously, becoming the code manager for all codes would dilute the effectiveness of both functions and raise serious concerns over how conflicts of interest would be managed. Decision making and code management should not lie with the FSO and should instead remain with Ofgem due to its underlying responsibilities as a regulator.

It is unclear how current codes, which sit separately, could be consolidated. We ask BEIS and Ofgem to provide further detail around the benefit and thinking behind this proposal.

In principle, we are supportive of the FSO providing advice and insight on the implications of decisions or how codes could affect future system operability, where appropriate, and where it has the requisite knowledge to do so. It is important to recognise that the full set of energy codes and standards are diverse, with some of a more technical nature and others more commercial, and code development should be informed by those with expert knowledge and experience. While the FSO would likely retain the skills and expertise of the ESO, which is currently code administrator for a number of codes, extra resource and capability would be required if the FSO is expected to provide insight across all codes and understand the consequential impacts of change overall.

Whilst we welcome the inclusion of engineering standards within the scope of the energy code review, we do however have concerns around the FSO recommending engineering standards. TOs continue to be most suitable for this role, as they have extensive knowledge of the assets they operate, the environment they operate within, and have expert engineering teams who are best placed in devising these standards.

Network licensees can also provide guidance, views and expertise on practical implementation and wider impacts on the network. In general, TOs should play a more active role in code governance relating to network users, and the consequential impacts upon the network and its efficient operation. There should be a formal process and engagement with

any future code manager for ensuring sufficient network licensee input into any future code amendments.

More importantly, it should be noted that the energy system has moved on significantly since the current code objectives were set and a review could ensure consistency of decision-making and acknowledge the inter-relationships between codes. We would strongly welcome a review of code objectives, particularly to specifically include net zero as an objective.

Driving Competition in Energy Networks

We re-iterate our concern on the introduction of competition onto onshore and offshore transmission networks and direct BEIS and Ofgem to our responses to the ESO's Phase 3 Competition¹² and Ofgem's recent consultation on its views on early competition and the OTNR.

Our assessment of proposals to date shows that competition can:

- delay the delivery of transmission infrastructure, delay Net Zero, and rather than reducing costs for consumers, can increase costs through the need for further constraint payments as a result of these delays;
- create uncertainty, particularly in risk allocation, and therefore directly impact investment and delivery appetite. Developers and the supply chain will not have a clear route to market or a defined pipeline of projects, impacting investment into both increasing capacity in the supply chain and to projects themselves – a critical issue when we are competing in a global market;
- create a “race to the bottom” and sacrifice benefits of a natural monopoly such as high sustainability standards, and economies of scale and scope, fair tax, living wage etc.; and,
- create a fragmented network, threatening the network's security of supply, reliability and increasing the potential for overlapping costs, rather than creating efficiencies.

Dispute resolution

Dispute regulation must remain with Ofgem. The FSO will still be a regulated industry participant under Ofgem. There must be clear separation of powers to reduce conflicts of interests to ensure all parties are treated equally and avoiding perverse incentives where there is misalignment of price control commitments and settlements.

Coordination with Distribution

We recognise that TOs and DNOs have a significant role in ensuring whole system solutions are being identified and progressed. Many of these ambitions can be sought within the two entities. However, we also welcome additional coordination with distribution through a new FSO.

¹² <https://www.nationalgrideso.com/document/190366/download>

We welcome the FSO to adopt a more long-term outlook on the future operational requirements of the GB network, whilst recognising changes to both transmission and distribution networks. The FSO could play a role in establishing a forward-looking view of system operations with the anticipated mix of demand, generation, and new technologies required to operate a secure Net Zero system.

13. What are your views on our proposed characteristics and attributes of a future system operator and how the models presented would deliver against them? Are there other characteristics or attributes that we have not yet considered?

We do not have strong views.

14. Are we considering the right organisation models for the FSO? And why?

We do not have strong views. We ask BEIS and Ofgem to address our above concerns ahead of pressing ahead with organisation models.

15. Are we considering the right elements for the FSO's regulatory and accountability frameworks? And why?

We ask for further detail in the FSO's roles and responsibilities, including accountability. Who the FSO is accountable to will influence its role and focus. We also ask for clarity in the challenge process, should TOs disagree with advice of FSO.

16. Do you have views on the level of shareholding or control involving other 'energy interests' and the FSO at which a conflict of interest would become a concern?

We do not have strong views.

17. Are we considering the right implications of our proposals for Elexon and Xoserve?

Elexon and Xoserve provide key services to the industry. It is essential to consider how the services and roles that they provide continue to be delivered. We agree that any proposals would need to ensure that Elexon retains its operational independence and remains accountable to the industry it serves.

18. What is your view on the preferred implementation approach? Please explain why.

We support a phased implementation, as incremental changes are likely to bring the least disruption. As we have set out at length in this response, Ofgem and BEIS must ensure that any introduction of the FSO does not impact critical decision-making timelines for network investments. This will result in serious risks to the delivery of Net Zero.

19. Based on the areas where we are considering new and enhanced roles and functions for the FSO, which of these should be prioritised for development? Please explain why.

We support coordination between transmission and distribution to be prioritised. We refer to our response to Question 12, where we set this out in more detail. However, the fundamental

questions being asked must be answered first rather than pressing ahead with an ill-informed implementation plan based on optimism, which is what we have seen through Pathfinder.

20. What do you believe are the risks to implementation? How can these be mitigated?

We ask Ofgem and BEIS to provide visibility of the timelines of key decision points as soon as possible, as the FSO proposals introduce real risks of disruption for the energy system as a whole. As TOs, we require early insights to understand key impacts on our everyday operation ahead of RIIO-T3 development. It is important for BEIS and Ofgem to consider the challenges in implementation, and balance this with the pace required to meet Net Zero.

We re-iterate our concerns that the introduction and implementation of the FSO could act as a distraction and turn focus away from the real challenges, and decision-making required to achieve Net Zero. The industry is currently undergoing unprecedented uncertainty. Introducing a new FSO could add more uncertainty which may constrain more renewable generation deployment.

21. Do you have any comments on potential implications of implementation for you, your organisation, or other stakeholders?

Our response sets out our concerns at length, but we reiterate our key main points:

Implementation of a new FSO could delay analysis and support on LOTI projects including projects to connect offshore wind. Legislation, role transfers and identifying code structures are fundamental changes to the energy industry. We are concerned that should the current ESO adopt additional roles in becoming the FSO, this decreases its already limited availability for undertaking needs case analysis for LOTI projects, which is vital for Ofgem's decision making. This will have a significant impact on these essential infrastructure projects that are required to transport renewable electricity to centres of demand.

NGESO estimated, after NOA 2020/21 reinforcements are delivered, that consumers could still face paying up to £2.5bn in constraint payments a year because essential transmission reinforcements will not be delivered quickly enough to support increasing levels of renewable generation¹³. This risk could be further exacerbated by inefficient implementation of an FSO.

The benefits case for a new FSO has been focused on efficiency between industry parties i.e. whole system, and not focused on connecting customers or Net Zero, therefore significant stakeholder groups have therefore been missed. This will undoubtedly have an impact on both current customers in the process of connecting and future customers as any transfer of business will have some associated level of disruption. Delay of connecting renewable generation is not in the interest of consumers. Net Zero should be at heart of any policy development and implementation in addition to minimising the cost impact of policy change which is justified and evidenced as being necessary.

¹³ <https://www.nationalgrideso.com/document/194436/download>

22. What is your view on the position there are likely to be cost savings across the energy system from an increased “whole system” view, as described in paragraphs 47-52 of the IA? If so, is the potential magnitude of savings illustrated fairly in the IA? If not, why not?

We do not think that a new FSO is necessarily required to provide the anticipated benefits of improved whole systems decision making set out in paragraph 48. We address each claim in turn:

- Identifying and promoting innovative solutions can be encouraged under the current price control framework, with the right codes and licence obligations. It may not require wholesale and costly reconfiguring of the current framework;
- We think that the current ESO already has the skills to identify challenges to system operability, but lacks the framework to implement and address them;
- It's not clear why Ofgem could not undertake the role of better coordinating investment decisions to ensure alignment with whole system needs and goals; and,
- For third parties to participate in innovation projects, the right incentives must be in place.

We do not think that the magnitude of cost savings illustrated in the IA is justified adequately. It is unclear how the IA determined the anticipated cost savings of 1-5% of transmission's totex allowance. There is no evidence as to where, nor the methodology presented, as to how these percentages were derived. Many of the benefits are described in broad generalisations, such as “improved whole system decision-making”, without identification of weaknesses of the current regime or how BEIS and Ofgem have assessed these benefits to arrive at these broad conclusions. These aspirational benefits are not specific, measurable nor time bound.

Many of the benefits, including promoting innovation, are already undertaken through the current price control framework. For example, there is currently a re-opener mechanism in place which allows licensees to consider and implement whole system solutions, as well as whole system licence conditions. It's not clear if there are costs savings related to this mechanism, and whether or not the projected savings of 1-5% take this mechanism into account.

If the FSO is to be implemented, there needs to be periodic performance reviews or close out mechanisms to determine if benefits are realised in reality. The Government's Green Book states that benefit realisation through monitoring and evaluation should be determined as part of the wider IA process¹⁴.

23. What is your view on the conclusion that policy intervention is likely to increase the benefits of onshore electricity network competition, as described in paragraphs 53-59 of the IA? If you agree, is the potential magnitude of savings illustrated fairly in the IA? If not, why not?

¹⁴ <https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-government>

Firstly, the benefits of competition in the onshore transmission set out in the most recent IA by Ofgem¹⁵ cannot be relied on and are wholly unrepresentative, regardless of who is the authority or Procurement Body in the process.

We note that expected net benefits set out in the IA are based on the 2016 IA, which is out of date and does not reflect new Net Zero ambitions. There is an updated IA by BEIS (late competition) and Ofgem (early competition), however we think there are fundamental shortcomings in the analysis, as we set out in our response to Ofgem's consultation on its views on early competition. For example, the recent IA undertaken in 2021 by Ofgem for early competition draws its benefits from comparison with North American projects, which operate in a drastically different legal and regulatory frameworks. It also fails to account for potential delays or failures of projects for connecting customers, Net Zero targets, and impacts on security of supply. Excluding these factors results in a misleading portrayal of net benefits for consumers.

Secondly, suggesting that policy intervention (i.e. introducing an FSO) contributes to 25-50% additional benefit for onshore electricity competition is grossly overstated and unsubstantiated, and tenuous at best. We ask Ofgem and BEIS to provide comparable evidence or case studies that demonstrate that similar policy intervention has resulted in:

- increased participation in competition;
- better identification and realisation of opportunities for competition; and,
- that better decisions will be made on the competitive framework due to removal of perceived conflicts of interest.

Realisation of these benefits is dependent on many other factors including risk profile and appetite of potential competitors and investors, capability within decision-making bodies; continued engagement and input from network companies, etc. A transfer of skills from the current ESO to the FSO cannot provide such significant savings as the IA claims.

24. Do you think that the impact assessment has identified and considered the key costs and benefits of policy intervention? If not, can you provide details on other impacts that have not been considered?

No. The IA makes broad sweeping assumptions, does not explicitly identify the shortcomings of the current system, and how the FSO proposals will address these challenges. For example:

- The IA does not indicate how a new FSO will contribute to carbon abatement and how this will be measured; and,
- The IA does not monetise costs related to potential delays in decision-making and therefore Net Zero targets.

¹⁵ <https://www.ofgem.gov.uk/publications/consultation-our-views-early-competition-onshore-electricity-transmission-networks>

These risks should be included, at the very least, as sensitivities given the value and importance of these attributes to GB economy and society. Excluding these factors results in a misleading portrayal of net benefits for consumers.

Any analysis of the benefits of institutional change and an introduction of a new major participant must, at a minimum, acknowledge, reflect, and plan for potential risks and adverse impacts on the operability and performance of the wider network.

25. Do you think that the distribution of impacts is fairly represented, with impacted groups correctly identified? Outlined in table 5 of the IA.

Many of the of the anticipated benefits are generalisations, and speculative at best. There lacks robust evidence on the below anticipated benefits:

- Improved trust in SO decisions/advice;
- Improved impartial advice;
- Greater ability to meet policy goals;
- Greater transparency in decision making;
- More belief in fair consideration of [an energy firm's] network solution proposals.
- Increased opportunities for innovation; and
- More responsive energy system to changing needs.

There is no evidence to suggest these benefits will materialise. A new body may add additional complexity into a network that is already high performing. We ask Ofgem and BEIS to articulate the specific barriers to whole system thinking and Net Zero, and why the current frameworks cannot be amended and simplified to address them.

Furthermore, we again emphasise the clear lack of consideration to delays to Net Zero that institutional reform can bring. The IA does not reflect best practice set out in the Government's Green Book on accounting for socio-economic value and is focussed solely on cost efficiency which it then fails to evidence.

26. We invite respondents' views on whether the proposals for energy system governance reform may have a different impact on people who have a protected characteristic (age, disability, gender re-assignment, marriage and civil partnership, pregnancy and maternity, race, religion or belief, sex or sexual orientation), in different ways from people who don't have that characteristic.

We do not have strong views. We note that industry wide reform with a tenuous benefits case and potential for poor implementation of policy will have the most significant impacts on the poorest in society. Fuel poor consumers will be paying proportionally more for regulatory burden and costs of failed processes, which is contrary to a just transition to Net Zero.